Application of Expertise in Education and Learning

Arun Kumar Tripathi

Doctoral Researcher

Department of Philosophy of Technology, Institute for Philosophy

Dresden University of Technology, Germany

Researcher, National Institute of Science, Technology & Development

Studies (NISTADS), New Delhi, India

Summary

In many areas, the student can only learn to be an expert by imitating the day by day responses to specific situations of someone who is already an expert, or ideally, a master, and only by working closely with students in a shared situation and shared social practices can teachers pass on their passion and skill to their students. According to the Dreyfus brothers model of skill acquisition, sometimes the shared situation included community practices as part of what is learned and sometimes it will not, but in any case the actual (real) presence of the coach or master is essential. So, in general, in so far as teachers want to teach skill in particular domains and practical wisdom in life, which they certainly do, they finally run up against the limits of the technologies. Learning by apprenticeship can work only in the shared situations of the production sites of the crafts, or in the nearness of the classroom and laboratory, are limited with technologies. This essay will emphasize the level of expertise and its application in the field of learning and education.

Keywords: apprenticeship, education, internet, learning, technology use, phenomenology, Cartesian, philosophy, cognitive science, Kant, Caputo, Hubert Dreyfus

Phenomenology counters the marginalization of the body resulting from Cartesian mind/body dualism by addressing the body's role in understanding such issues as intentionality and human agency. These issues continue to play a key role in contemporary interdisciplinary debates that take place on the threshold between phenomenology, philosophy of mind and cognitive science. Although the fruitfulness of these debates demonstrates the relevance of phenomenological approaches to the lived body, alternate accounts open up questions about its possible limits. For example, psychoanalysis, postmodernism, and feminist and gender theory have helped refine our understanding of the body, focusing on themes such as the body's vulnerability, sexual identity, violence, and bodily integrity—issues which some

believe are neglected in phenomenological approaches. On June 6-8, 2006 at the Department of Physical Education, Norwegian School of Sport Sciences, Oslo I participated in a Research Course on Phenomenological Approaches to Moral Philosophy and Education. The aim of the Research Course was to introduce a phenomenological understanding of the development of ethical expertise and **practical wisdom (*phronesis*)**, and to explore moral life in educational settings and practices of, for instance, research, teaching, philosophy, sport and movement cultures.

One of the most controversial phenomenological approaches is the ethical implication of the skills model formulated by Hubert Dreyfus and Stuart Dreyfus.[1] They assume that acting ethically is a skill based upon long experience rather than reliance on rules. Therefore, in order to become an ethical expert, it's a question of learning to respond appropriately to each unique situation. The skills model thus supports an ethics of situated involvement such as that of Aristotle against the detached, rationalist ethics of Kant and others. Related to the Aristotelian approach Shaun Gallagher has discussed the place of *phronesis* (practical wisdom) in postmodern hermeneutics.[2] Instead of reducing phronesis to cleverness or elevating it to what Caputo calls "meta-phronesis", Gallagher in his paper "The Educational Backdrop of *Phronesis*" argues for a hermeneutic conception of *phronesis* which presuppose an existing schema, a world already in place. *Phronesis* cannot operate outside of established paradigms but neither is it possible sticking to formula in advance. Therefore, in learning to act *kata ton orthon logon* (according to right reason) it's a not question of a sudden insight but of years of training and education. However, irrespective of the competing views within moral theory, it too might be wise to reconsider the power of example in moral discourse. Lars Løvlie has suggested a poetics of ethics based upon reflective judgment.[3] By treating rules and skills as examples they will appear as equivocal and even undecidable elements in moral discourse, he thinks. While the notion of reflective judgment is expanding the reach of reflection, the notion of undecidability involved in ethical decision-making appears relevant for introducing the role of the body in moral philosophy. When comparing the decision-making processes of experts in ethics to those who are merely competent in the field, the body-subjects tendency to seek an equilibrium with the world (by acquiring skills and establishing what Merleau-Ponty refers to as 'intentional arcs') might be related to ethical

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[1] Hubert L. Dreyfus and Stuart E. Dreyfus: The Ethical Implications of the Five-Stage Skill-Acquisition Model. *Bulletin of Science, Technology & Society* 24: 251-264, 2004.
[2] Shaun Gallagher: The Place of Phronesis in Postmodern Hermeneutics. *Philosophy Today* 37: 298-305, 1993; Shaun Gallagher: Les conditions de corporéité et d'intersubjectivité chez la personne morale. *Théologiques* 12 (1-2), 2004.
[3] Lars Løvlie: Of Rules, Skills and Examples in Moral Education. *Nordisk Pedagogik* 13:76-91, 1993.

deciding in an embodied and habitual manner, or what is called **skillful coping** by the Dreyfus brothers.[4]

In Europe around l850 the new importance of the press accentuated an essential feature of language, viz. the dissemination of information and thereby introduced the first revolution in information technology (IT). Danish philosopher Soren Kierkegaard responded with a devastating critique of the curiosity fostered by the media and condemned in advance what he saw as the uncommitted and dispersed spectator that would be produced by the new easy access to information. Commitment to information as a boundless source of enjoyment puts one in what Kierkegaard called the aesthetic sphere of existence. Such a life is typified by the net-surfer who is interested in everything with no distinction between the trivial and important, the quantitative and the qualitative, Dreyfus says.

Hubert Dreyfus argues, that, Kierkegaard saw that this sphere would breakdown under the glut of undifferentiated information. He predicted that it would be replaced by a second stage in which another essential feature of language, the use of speech acts such as requesting and promising, would enable people to live in what he called the ethical sphere. In this form of life everything would be directed towards action. Information would be expected to yield power by enabling people to make informed decisions. But it would soon become clear that information alone does not lead to power but paralysis. In order to use information, people would need to have life-plans, fulfill roles, take up tasks and, above all, make commitments. We are now in the second stage of IT and it is becoming clear how the ethical sphere can be implemented bu using computers to keep track of commitments in order to further the coordination of action. But, since commitments proliferate endlessly, if there is no distinction between which actions are important and which are trivial, commitment for action will again end in paralysis. The ethical person responds to this breakdown by trying to choose what will count as important.

In my view, if Kierkegaard is right, the third stage of IT, which is still on the horizon, will bring out a third essential feature of language. It will accentuate language's capacity to define identities and open worlds by means of narratives. Given the tendency toward long term

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[4] Sean D. Kelly: "Grasping at Straws: Motor Intentionality and the Cognitive Science of Skilled Behavior". *Heidegger, Coping, and Cognitive Science*. M. Wrathall and J. Malpas, eds. Cambridge: MIT Press, 2000. See also Jack Reynolds: Habituality and Undecidability: A Comparison of Merleau-Ponty and Derrida on the Decision. *International Journal of Philosophical Studies* 10: 449-466, 2002.

commitments latent in language, such identities will be experienced as ones that one is willing to die to maintain. Such identities based on unconditional commitments will determine what ultimately matters and so finally establish qualitative differences between what is important and trivial, relevant and irrelevant, serious and playful. With such a meaningful framework in place, one will finally be able to use the first two stages of IT, the providing of boundless information and the means for soliciting and keeping track of commitments, in the service of meaningful action organized into a meaningful life, Dreyfus argues.

Hubert and Stuart Dreyfus believe such reliance on the Internet is dangerous because, as they have argued while discussing the skill models, the imitation of the example of the teacher is a crucially important element in education at all levels. In many areas, the student can only learn to be an expert by imitating the day by day responses to specific situations of someone who is already an expert, or ideally, a master, and only by working closely with students in a shared situation and shared social practices can teachers pass on their passion and skill to their students. According to the model of skill acquisition, sometimes the shared situation included community practices as part of what is learned and sometimes it will not, but in any case the actual (real) presence of the coach or master is essential. So, in general, in so far as teachers want to teach skill in particular domains and practical wisdom in life, which they certainly do, they finally run up against the limits of the World Wide Web. As far as they can see, learning by apprenticeship can work only in the shared situations of the production sites of the crafts, or in the nearness of the classroom and laboratory; can never be achieved in cyberspace.

Thus the use of the Internet represents an impoverishment, not an improvement, of education. It can facilitate a kind of mass education, but it will only teach the students the rules and facts that can make them competent. Without experience guided by expert coaches and without apprenticeship to exemplary teachers whose commitment and style is manifest on a day to day basis so it can be imitated, such mass education will not normally produce experts, and wisdom and mastery will remain completely out of reach.

Parthasarathi Banerjee (1988) explains, that, popular basic education is becoming more and more elusive. This unattainability is reflected in its failure to encompass the mass of people, in its inability to offer a meaningful pedagogy and in its inability to offer to the people a satisfying instrument. It is amazing that not only a populous country such as India, or a less populous but perhaps poorer country as one would find in Africa, have failed in providing for education; but also the richer countries that boast of statistics of 'literate' populace sadly lack

an educated mass of people. As a result the edifice of 'public space', built up through literacy or informative institutions of popular education and on which the pillars of democracy were mounted, is now crumbling (Banerjee, 1988).

Banerjee (1988) elaborates, that, in basic education we argue for two basic elements. The first is drilling in a productive engagement, following authoritative rules, such that the student may acquire a skill. Second is the inculcation of an attitude of aesthetics or of truth so that the student may engage with the world later in life, fearlessly, in order to know and enjoy and also in order to secure the good for which she/he has acted. We also argue that the characteristic feature of basic education is that it is non-theoretical. The goal of non-theoretical basic education is to enable the student to undertake independent action.

This summary statement regarding basic education is derived from two sources. The first is the tradition of imparting basic education in India. The second is some distinctive features of the Indian theoretical tradition that provide the ground and the content of basic education. This tradition of conducting basic education is rather old. We shall, however, not refer to the history of this business. We shall instead refer mostly to some necessary elements of the theoretical tradition (Banerjee, 1988).

People have claimed that computers can be programmed to exhibit skill in such domains as medical diagnosis, face recognition, and in playing games such as backgammon and chess. Along with Hubert Dreyfus, I would think of myself as an applied philosopher reflecting on the bearing of the work of existential thinkers such as Soren Kierkegaard, Martin Heidegger and Maurice Merleau-Ponty on current cultural developments such as the attempt to create artificial intelligence, and the effect of the Internet and various technologies that facilitate action at a distance, on everyday human interactions.

Stuart Dreyfus has argued for a method which determines the optimal sequence of decisions in problems involving a process evolving over time. The method assumes a "model" of the situation, meaning a rule describing how decisions affect the evolution of the process and what elements of the situation enter into the rule. Since themethod is only as good as the "mode," and the "model" often must be provided by an expert in the area modeled, his interest turned to how experts acquire decision-making skills and whether they can be expected to provide reliable "models." This led to work with his brother, Hubert Dreyfus, and to their joint book „Mind over Machine." In „Mind over Machine" they argue that experts generally

don't develop and use such "models."Stuart Dreyfus is now investigating "model-free learning," a method by which a brain or a computer algorithm can successfully acquire a skill without ever developing a „model." According to Stuart Dreyfus, for a dynamic (sequential) decision process, he considers a model being identification of what constitutes "state" (i.e., what, perhaps including past history, is needed to predict behavior), dynamics (for determining the effect of a decision given the state, and cost (for determining the cost, if any, of taking a decision given the state. The dynamics and cost rule can involve random variables. Model-free means determining the optimal decision policy for such a process be observing the results at each stage of the process of various decisions (experimentation) and adjusting decisions accordingly without using this observed behavior in order to learn what constitutes state, what are the dynamics and what rule produce the costs. That one can optimize decisions without attempting to learn a model is contrary to what adaptive control algorithms usually do, but Stuart Dreyfus believes it is what brains do.

Description of Model of Skill Acquisition

Stage 1: Novice

In the beginning a novice student learns to recognize objective facts and features, relevant to the skill. Characteristic of relevant elements are that they can be recognized context-free, i.e. without reference to the overall situation. The novice acquire basic rules to follow, acting upon those facts and features. The rules are also context-free, i.e. no notice is taken to the surroundings. On account of this the novice feels very little responsibility for the result.

Stage 2: Advanced beginner

The novice student needs to cope with real situations. When he does, he will improve his performance. This means that the advanced beginner does not learn by rules or verbal description, but by experience. "Through practical experience in concrete situations with meaningful elements, which neither an instructor nor the learner can define in terms of objectively recognizable context-free features, the advanced beginner starts to recognize those elements when they are present". The new elements are called „situational", i.e. they are relevant in a specific situation. The advanced beginner will now refer his decision-making to both the context-free and the situational elements. Like the novice student, the advanced beginner applies learned rules to recognized components, and therefore feels little responsibility for the result.

Stage 3: Competent

As time passes by, there is no possibility to keep all elements (both context-free and situational) in mind. If the performer does, he will not focus on the goal. He needs to adopt a hierarchical procedure of decision-making. He also needs to organize the situation, choosing an organization plan, and then examine small set of factors. Accordingly the competent with a goal in mind sees a situation as a set of facts. The particular constellation of those elements decides a certain conclusion should be drawn, decision made, or expectation investigated. The competent performer feels responsible for his outcome, since he is more involved in the process than the novice and advanced beginner.

Stage 4: Proficient

The proficient performer is deeply involved in his task. Certain features of the situation are more important than others. Step by step salient features change, and deliberation is not possible. The proficient performer has experienced similar situations in the past and so associates with present situations plans that worked in the past and anticipates consequences that previously occurred. The proficient performer responds to patterns without decomposing them into components, this is known as „holistic discrimination and association". The proficient, then is recognized by involved and intuitive understanding followed by detached decisionmaking.

Stage 5: Expert

An expert performer generally knows what to do base on mature and practiced understanding. The expert does not see problems in some detached way. The skill of an expert is a part of him and he is deeply involved in coping with his environment. It is argued, that, when things are proceeding normally, experts don't make decisions; they do what normally works. With enough experience in a variety of situations, all seen from the same perspective or with the same goal in mind but requiring different tactical decisions, the mind of the proficient performer seems to group together situations sharing not only the same goal or perspective but also the same decision, action, or tactic. At this point not only is a situation, when seen as similar to a prior one, understood, but the associated decision, action, or tactic simultaneously comes to mind. An ability to discriminate an immense number of situations is produced by experience. With expertise comes fluid performance.

Considering some examples can help us see how mastery goes beyond expert level. At the mastery level, it can be seen, what must be done, simply is done (it is an unreflective thinking and judgment). It seems that beginners make judgments using strict rules and features but that with talent and a great deal of involved experience, the beginner develops into an expert (and mastery) who sees intuitively what to do without applying rules and making judgments at all. The intellectualist tradition has given an accurate description of the beginner and of the expert facing an unfamiliar situation, but normally an expert does not deliberate. He or she neither reasons nor acts deliberately. He or she simply spontaneously does what has normally worked and, naturally, it normally works, Dreyfus argues.

John Dewey (***Human Nature and Conduct An Introduction to Social Psychology***, London: George Allen and Unwin 1922) introduced the distinction between *knowing how* and *knowing that* to call attention to just such thoughtless mastery of the everyday:

We may . . . be said to know how by means of our habits. . . . We walk and read aloud, we get off and on street cars; we dress and undress, and do a thousand useful acts without thinking of them. We knowsomething, namely, howto do them. . . . If we choose to call [this] knowledge . . . then other things also called knowledge, knowledge of and about things, knowledge that things are thus and so, knowledge that involves reflection and conscious appreciation, remains of a different sort. (pp. 177-178)

I would argue that, we are all experts at many tasks, and our everyday coping skills function smoothly and transparently so as to free us to be aware of other aspects of our lives where we are not so skillful. That is why philosophers (with the exception of Aristotle) overlooked them for 2,500 years, until pragmatism and existential phenomenology came along, Dreyfus claims.

Understanding „Know-how"

First of all, it is necessary to understand what Dreyfus means by ‚know-how' (what is often referred to as ‚procedural knowledge'). For Dreyfus, skills are mastered through the cultivation of know-how. Know-how is embodied, implicit, non-inferential, non-propositional knowledge, cultivated through experience, that gives rise to spontaneous, flexible, and decisive action that is appropriately responsive to one's immediate environment. Concentration, practice, imitation, prolonged exposure, and emotional involvement enable the

development of associative response patterns that habitual practice engrains into memory. These response patterns are the know-how by which one masters the domain of a given skill.

To use two of Dreyfus' examples, in playing chess the novice may start out using a numerical value for each type of piece to calculate moves according to the rule: "Always exchange if the total value of pieces captured exceeds the value of pieces lost". Chess masters, on the other hand, have developed an immediate and non-deliberative "compelling sense" of the best move: they see the game as a dynamic, shifting set of patterns whose meaning they are able to comprehend and respond to rapidly. Such know-how allows them to play at the rate of 5-10 seconds a move (or faster) without degradation of performance. It also allows them to play well even when they are placed under a significant cognitive load.[i]

Importantly, however, know-how also plays a role in other (perhaps more basic) activities. As Francisco Varela has pointed out, a substantial portion of our knowledge is know-how, which forms the backbone of the process by which living beings engage their environments.[ii] John Dewey also noted the importance of know-how when he wrote,

> We may…be said to *know how* by means of our habits…We walk and read aloud, we get off and on street cars, we dress and undress, and do a thousand useful acts without thinking of them. We *know* something, namely, *how* to do them.[iii]

Dewey is suggesting that the development of know-how is crucial for the navigation of the complexities of our environments. Whether it is walking across rugged terrain, reading a newspaper, putting on a pair of pants, or engaging in a conversation, most of our daily activities are accomplished without planning, deliberation, or reflection. In this way, know-how plays a central role in our lives, for it enables the seamless, "mindless" (yet often appropriate) engagement that makes up much of our daily experience.

Bio

Arun Kumar Tripathi (from April to September, 2010 worked as a Visiting Researcher and Project Statistician at the NISTADS, New Delhi) is a Doctoral Researcher and Project Research Assistant at the Department of Philosophy of Technology, Institute for Philosophy, Dresden University of Technology. Tripathi is a member of Association for the Advancement of Computing in Education (AACE) since 1999 and founder member of WAOE since 1998. Arun Tripathi worked for 7 years (2002 – 2009) as the research assistant at the Department of

Philosophy of Technology, Institute for Philosophy, Dresden University of Technology, Germany. Tripathi research interests include kinaesthetic aspects of cyberspace, phenomenological concepts of embodiment in computer games, phenomenology of human-technology relations in education, ubiquitous computing, Application of Artificial Intelligence in education, and cognitive aspects of human-computer interactions. E-Mail: arun.tripathi@waoe.org

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[i] That is, the performance of chess masters showed only a slight fluctuation in performance even when they were asked to engage in cognitive tasks like number memorization: Dreyfus (1986).

[ii] Varela actually claims that *all* knowledge is know-how: "Knowing is effective action; that is, operating effectively in the domain of existence of living beings". But we need not accept this stronger claim, for the point I am making is just that some, if not most, of our knowledge is "effective action", or know-how. Francisco Varela and Humberto Mutarana (1987). The *Tree of Knowledge: The Biological Roots of Human Understanding*. Boston, MA: Shambhala Publications, p. 29. See also, *The Embodied Mind* (Francisco Varela, Evan Thompson, and Eleanor Rosch, 2000, MIT Press) and *Ethical Know-How* (Varela, 1999).

[iii] John Dewey, *Human Nature and Conduct* (1922), as published in *John Dewey, The Middle Works*, 1899-1924, Vol. 14. Carbondale: Southern Illinois University Press, p. 177-178 (emphases added). See also Varela (1999: p. 9): "We always operate in some kind of immediacy of a given situation. Our lived world is so ready-at-hand that we have no deliberateness about what it is and how we inhabit it."